

National Aeronautics and Space Administration



LAGNIAPPE

John C. Stennis Space Center

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50 years – and counting!



Stennis Space Center employees enjoy a chance to view an RS-68 engine test at the B-1 Test Stand on April 19. The test viewing was part of a weeklong celebration of the 50th year of rocket engine testing at Stennis. The first test at the site occurred April 23, 1966, with a 15-second firing of a Saturn V second stage prototype (S-II-C) on the A-2 Test Stand. The center subsequently tested Apollo rocket stages that carried humans to the moon and every main engine used to power 135 space shuttle missions. It currently tests engines for NASA's new Space Launch System vehicle.



Ark! Did you attend my homecoming celebration April 20? I tried to meet everyone, but I probably missed some folk – there were so many there. What a great afternoon. It was so nice to visit with old friends Charlie Swan and Douglass Mayberry. And what fun to meet a new family of NASA folk, hard at work to keep Stennis a center of excellence for rocket engine testing.

We always felt like we were family in those early days of Stennis, when the place was being built and we were learning how to test rocket engines and stages. I am glad to know the sense of family is still strong. We come from a lot of different areas but share a common commitment – to keep the nation flying to space!

Speaking of flying (at least close to the ground), someone at the homecoming asked if I still have my cherished '63 green Plymouth convertible – and I do. Like me, it has a lot more miles on it, but it still looks pretty good in spite of the wear-and-tear and is still reasonably useful. Ark!

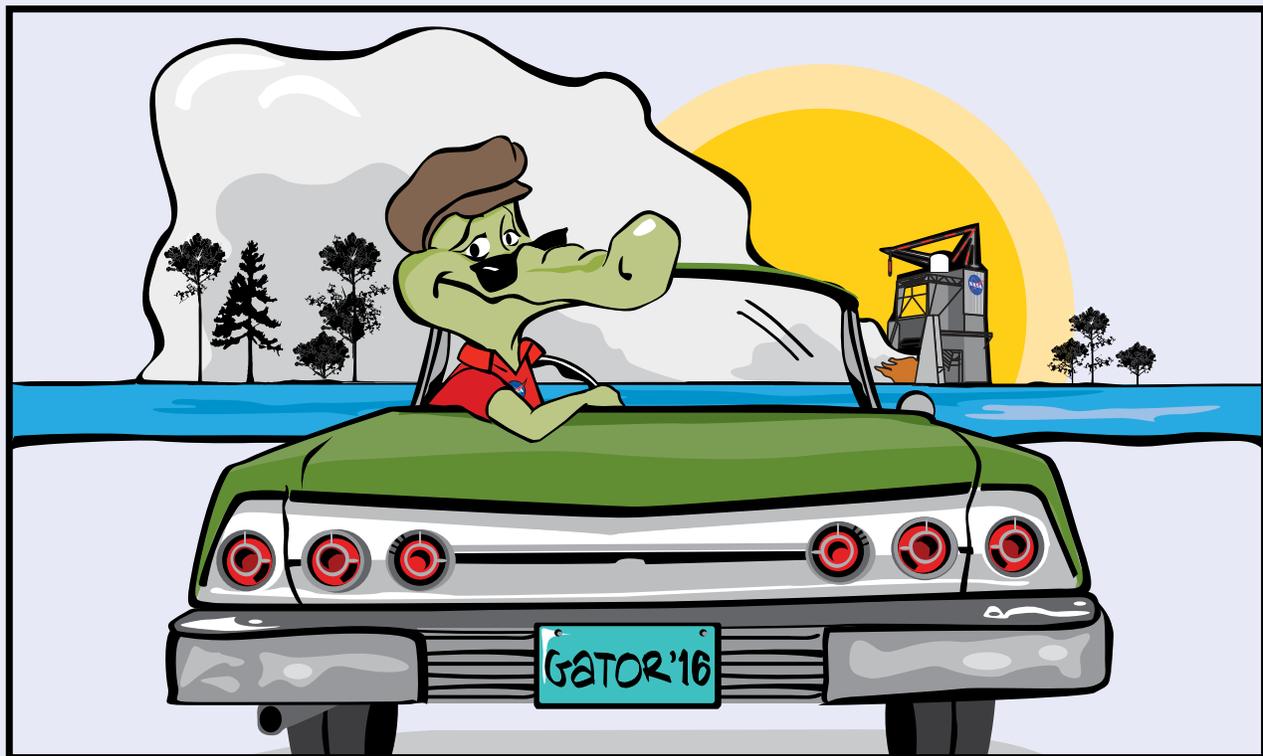
Imagine driving a 53-year-old car with hundreds of thousands of miles on it that still starts up every

morning and gets me from Point A to Point B – and sometimes even farther. Ark! But then, imagining that kind of car is not so hard for Stennis folk. After all, the test stands here are right about as old as my beloved convertible.

Those stands have been used for 50 or so years now and have tested a whole lot of engines. You could probably calculate how much testing time the stands have totaled up during those years, but I am not too sure my brain could process a number that high. Ark!

Like my convertible, the stands have had some upgrades and repair work done. You would expect that. After all, some of us have had some upgrades ourselves. Ark! More importantly, those Stennis stands have had some really good folk to take care of them.

It is a pretty remarkable story that nobody working out here so many years ago would have imagined, just as I cannot imagine being without my old convertible and having to walk everywhere I want to go. That said, it is much, much harder to imagine where in the world – or rather, away from the world – we could have gone if Stennis never had been built.



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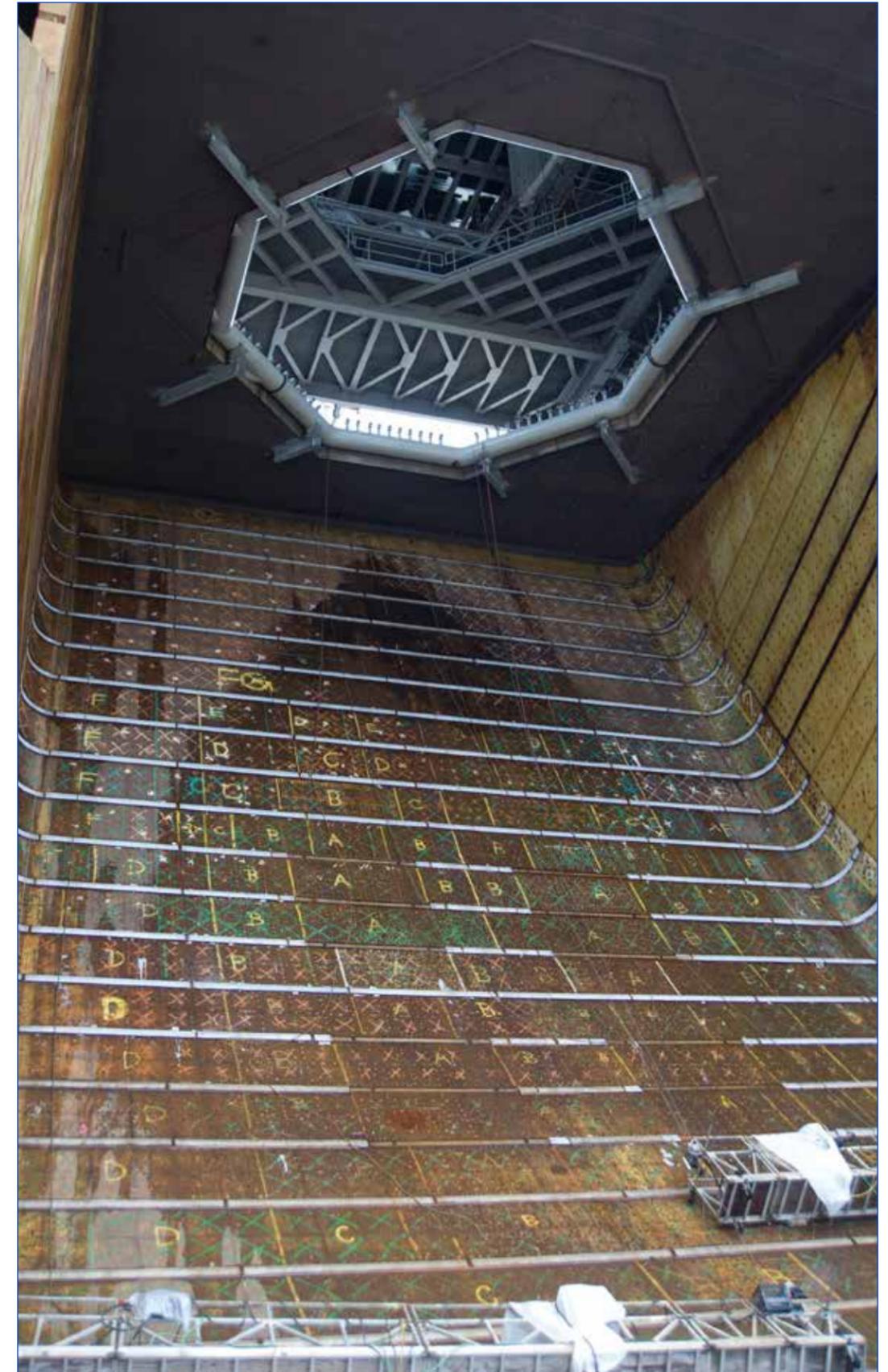
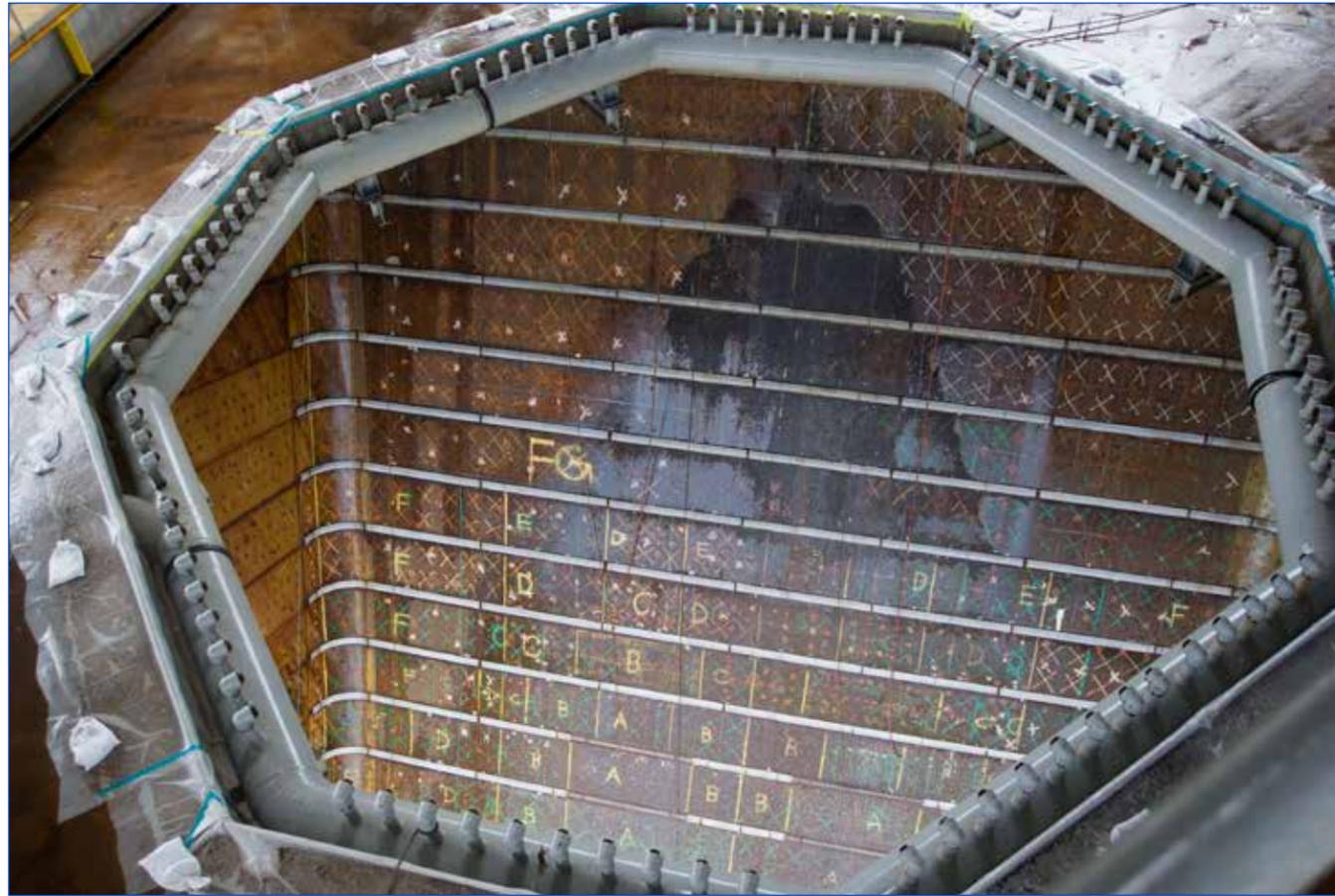
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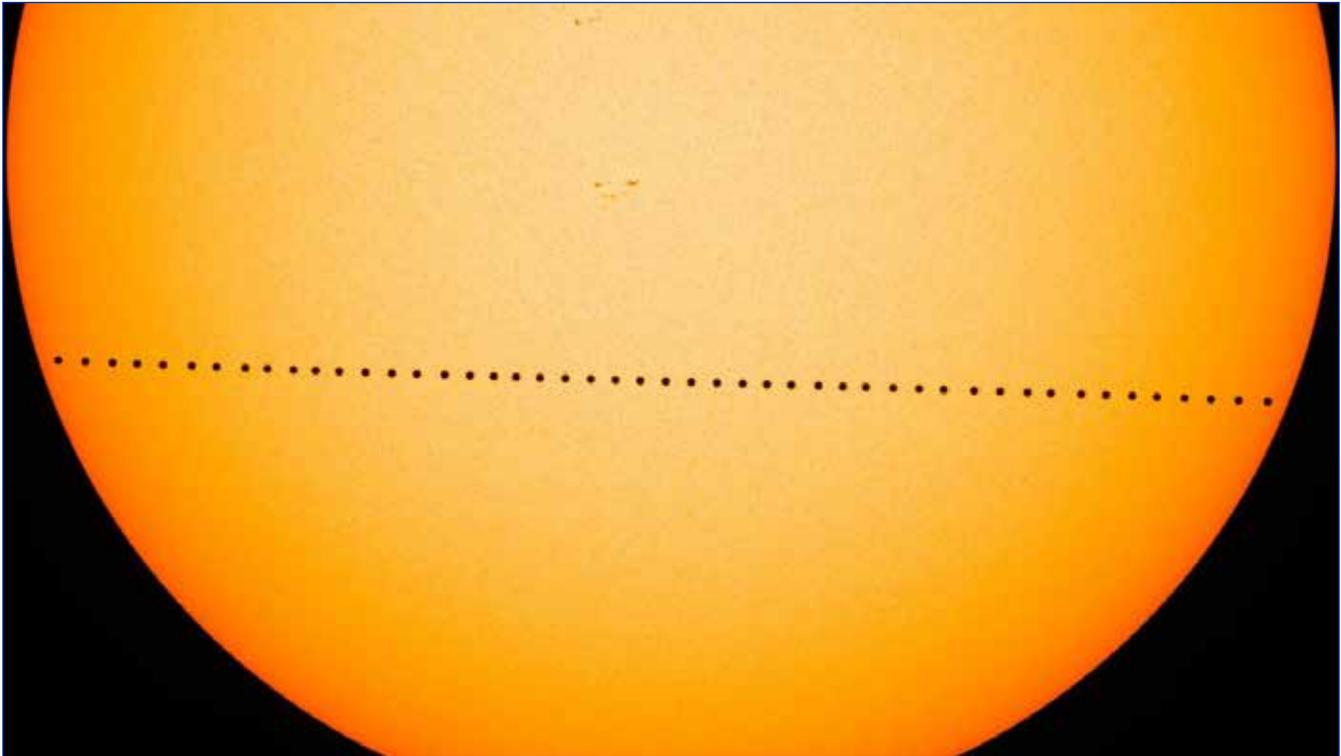


Setting the stage – work continues to prepare B-2 stand for SLS testing

Work continues to progress on the B-2 Test Stand at Stennis Space Center in preparation for testing the core stage of NASA's new Space Launch System (SLS) vehicle. Testing will involve installing the actual flight stage to be used on the first SLS flight (Exploration Mission-1) on the B-2 stand and firing its four RS-25 engines simultaneously, just as during a launch. Phases of stand preparations have been under way for three years, with months of studies and evaluations completed prior to that time as well. Recently, work crews installed piping needed for vibro-acoustic suppression during testing. The system is designed to create a spray of water around the stage engines to dampen the loudness of the test and protect the core stage from noise damage. The vibro-acoustic system will use about 87,000 gallons of water a minute – in addition to the 200,000-plus gallons used to protect the flame trench. A newly-installed fabricated piping system (bottom center photo) will deliver the water to four separate sections of the vibro-acoustic ring at the top of the flame trench (far right and top right photos). NASA is developing the SLS to carry humans deeper into space than ever before, to such destinations as an asteroid and Mars. Core-stage testing is scheduled for 2017, with the initial SLS flight set for 2018.



FULFILLING NASA'S EXPLORATION MISSION



On May 9, 2016, Mercury passed directly between the sun and Earth. This event – which happens about 13 times each century – is called a transit. NASA's Solar Dynamics Observatory, or SDO, studies the sun 24/7 and captured the entire seven-and-a-half-hour event. This composite image of Mercury's journey across the sun was created with visible-light images from the Helioseismic and Magnetic Imager on SDO. View a video of the Mercury transit online at: <https://www.youtube.com/watch?v=AhWMOkrzKzs>. Read at: <http://www.nasa.gov/feature/goddard/2016/satellites-to-see-mercury-enter-spotlight-on-may-9>.

NASA in the News

NASA plans global expeditions

NASA's Kepler mission has verified 1,284 new planets – the single largest finding of planets to date. “This announcement more than doubles the number of confirmed planets from Kepler,” said Ellen Stofan, chief scientist at NASA Headquarters in Washington. “This gives us hope that somewhere out there, around a star much like ours, we can eventually discover another Earth.” Analysis was performed on the Kepler space telescope's July 2015 planet candidate catalog, which identified 4,302 potential planets. For 1,284 of the candidates, the probability of being a planet is greater than 99 percent – the minimum required to earn the status of “planet.” An additional 1,327 candidates are more likely than not to be actual planets, but they do not meet the 99 percent threshold. In the new batch of planets, nearly 550 could be rocky planets like Earth, based on their size. Nine of these orbit in their sun's habitable zone, which is the distance from a star where orbiting planets can have surface temperatures that allow liquid water to pool. Twenty-one exoplanets now are known to be members of this exclusive group. For more, visit: <http://www.nasa.gov/kepler>

NASA makes patents available

NASA has released 56 formerly-patented agency technologies into the public domain, making its government-developed technologies freely available for unrestricted commercial use. In addition to the release of these technologies, a searchable database now is available that catalogs thousands of expired NASA patents already in the public domain. The technologies were developed to advance NASA missions but may have non-aerospace applications and be used by commercial space ventures and other companies free of charge, eliminating the time, expense and paperwork often associated with licensing intellectual property. The technologies include advanced manufacturing processes, sensors, propulsion methods, rocket nozzles, thrusters, aircraft wing designs and improved rocket safety and performance concepts. NASA's patent portfolio includes more than 1,000 technologies. To search the database of NASA technologies now in public domain, visit: <http://technology.nasa.gov/public-domain>. To learn more about the Technology Transfer Program, visit: <http://technology.nasa.gov>.

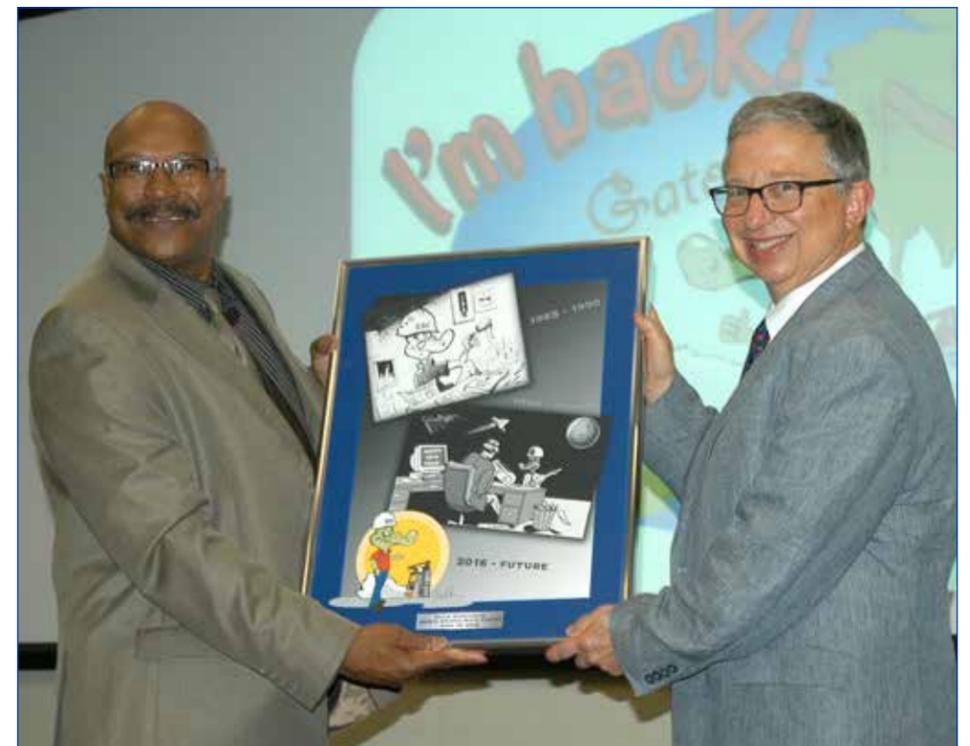
Access all NASA news releases online at: <http://go.nasa.gov/3f3KW>.

FULFILLING NASA'S EXPLORATION MISSION

'I'm back' – Stennis celebrates homecoming of Gator mascot



Stennis Space Center employees welcomed back longtime site mascot Gator during a special homecoming celebration April 20. Former Stennis employee Clyde Dease (top right photo) presided over a program that featured Charlie Swan (top left photo), the artist who created the Gator image in the 1960s. Gator was created as a motivational mascot for the center during the early construction years. In time, he was featured on site certificates and awards and gained a voice in commentaries written for the Stennis monthly magazine, *Lagniappe*. Gator disappeared from the scene in 2000 with the death of Mack Herring, former NASA public affairs officer and author of the *Lagniappe* commentaries. However, he was revived earlier this year as part of the celebration marking the 50th anniversary of the first rocket engine test at Stennis in 1966. In addition to Swan, the homecoming celebration also featured Douglass Mayberry, shown receiving a plaque of appreciation from Stennis Associate Director Ken Human (bottom right photo). Mayberry illustrated Gator following Swan's retirement from Stennis. Following the program, the two illustrators and current illustrator Angela Lane signed Gator lithographs and T-shirts (bottom left photo). NASA employees also marked the day by participating in a retro day, wearing the typical attire of a 1960s engineer (bottom center photo).



Stennis employees receive Silver Snoopy awards



Astronaut Drew Morgan (r) and Stennis Space Center Deputy Director Randy Galloway (l) stand with recipients of NASA's 2016 Silver Snoopy awards, presented during an onsite ceremony May 4. Nine Stennis employees and one Michoud Assembly Facility employee received the astronauts' personal award, presented to less than 1 percent of the total NASA workforce annually in recognition of contributions to flight safety and mission success. This year's Silver Snoopy recipients and ceremony participants were: (l to r) John Sneed (Stennis, Aerojet Rocketdyne); Skip Wright (Stennis, Syncom Space Services); Nestor Torres (Stennis, A²Research); Jay Labat (Stennis, Aerojet Rocketdyne); Neil Toupin (Stennis, NASA); Barrett Brayson (Stennis, Aerojet Rocketdyne); Eric Goller (Stennis, Syncom Space Services); David McCrary (Michoud, Syncom Space Services); Byron Bordelon (Stennis, Syncom Space Services); and B.T. Wigley (Stennis, NASA).

Stennis observes Earth Day

Stennis employee Bridget Moody (l to r) explains the benefits of biodegradable "cowpots" to Judith Jones of Madison Services and Toni Jones of the NASA Shared Services Center during the 2016 Earth Day emphasis at Stennis Space Center on April 21. Each year, the center hosts an expo featuring environmentally focused information and presentations, and displays of eco-friendly merchandise for purchase. This year's emphasis highlighted the Stennis composting program.



May 1963 – Old Gainesville town gets a railroad

Note: For more than 50 years, NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. This month's Lagniappe provides a glimpse into the history of the south Mississippi rocket engine test center.

A May 11, 1963, history-making event has been described as being “100 years too late to alter history, but just in time to play a big role in the future.” On this day, the first train pulled into old Gainesville, where the Mississippi Test Operations was under construction.

Located on the lush banks of the East Pearl River in Hancock County, Gainesville was one of five towns NASA purchased to build a huge rocket testing facility, known today as Stennis Space Center. Gainesville was one of the oldest towns in the state of Mississippi, with its history dating back to the early 1700s when French settlers found this spot.

In its heyday, Gainesville had three newspapers at one time or another. It was the only town on this side of Mobile, Alabama, to have a post office. The county seat of Hancock was once at Gainesville, and the city boomed when the timber business was thriving. As railroads began to network the area, Gainesville's access on the Pearl diminished and dropped by the wayside to become a sleepy fishing village.

NASA's \$500 million facility would someday test the rocket to blast the first Americans to the moon, but it had to be built from the ground up. That is why a railroad had to be immediately brought in to help serve construction crews working on the facility and the engineers and technicians testing NASA's giant Saturn rockets.

Southern Railway System was awarded the contract to

bring a 10.5-mile track into the test site by MTO's parent organization, Marshall Space Flight Center in Huntsville, Alabama. Southern built the track at no expense to the government. The line – running from Nicholson, north of the site, to old Gainesville, where a huge industrial complex would soon be constructed – was finished in record time.

Operating on a tight deadline, NASA set June 1, 1963, as the deadline for Southern to complete the job before construction began at the site the following month. Work on the track began March 19, and the last spike was driven May 10 – just 52 days after the start of the project and 22 days ahead of schedule. The L-S Construction Co. of New Orleans completed the grading, drainage and structures for the railroad company. Southern laid the track and operated and maintained the railroad.



J.F. Beaver, chief engineer of Southern Railroad, stands in front of the first train to roll into Gainesville, now Stennis Space Center, on May 11, 1963.

large swampy areas, which was a primary reason the project was not expected to be finished before the June 1 deadline. However, the area experienced one of its driest seasons in history from the time track construction was started until it was finished. The railroad workers lost only two days during the entire period because of rainy weather.

Another project involved an overhead bridge that had to be built over proposed Interstate 59, which also was finished off in plenty of time.

The last Gainesville residents already had found homes elsewhere to make way for the space center. Although Gainesville got her railroad May 11, 1963, it was believed had it been May 11, 1863, Gainesville could have possibly evolved into a huge metropolis.

The line passed through two

Office of Diversity and Equal Opportunity

Celebrate Asian Americans and Pacific Islanders Month

Since 1977, the month of May has been designated to recognize the achievements and contributions to the American story by Asian Americans and Pacific Islanders (APIs). We celebrate the cultural traditions, ancestry, native languages, and unique experiences represented among more than 56 ethnic groups (speaking over 100 languages) from Asia and the Pacific Islands who live in the United States.

The month of May denotes several events in AAPI history, including the immigration of the first Japanese people to the United States on May 7, 1843. The finalization of the transcontinental railroad also was accomplished May 10, 1869 by predominantly Chinese immigrants.

While these AAPI communities have roots that span the globe, their success stories are uniquely American.

The 1st Filipino Infantry Regiment was a segregated U.S. Army infantry regiment made up of Filipino Americans from the continental United States and veterans of the Battle of the Philippines that saw combat during World War II. It was formed and activated at Camp San Luis Obispo, California, under the auspices of the California National Guard.

Originally created as a battalion, it was declared a regiment in July 1942. Deployed to New Guinea in 1944, it became a source of manpower for Special Forces and units that would serve in occupied territories. In 1945, it deployed to the Philippines, where it first saw combat as a unit. After major combat operations, it remained in the Philippines until it returned to California and was deactivated in 1946 at Camp Stoneman.

The Chinese-American Composite Wing (CACW), the famed "Flying Tigers," was a joint U.S. Army Air Forces and a Republic of China Air Force organization. It was assigned to 14th Air Force in China during World War II. The units were jointly commanded by both American and Chinese air force officers, and many of the unit's aircraft were manned by Americans of Chinese ancestry.

The CACW could claim the destruction of 190 Japanese aircraft in air-to-air combat, and 301 on the ground. The fighters and bombers destroyed at least 1,500 Japanese vehicles and sunk several hundred thousand tons of Japanese merchant and naval shipping equipment. In addition, they took a heavy toll on Japanese ground troops, facilities, railroads and bridges.

Not a single CACW bomber was lost to enemy fighters, a tribute to the abilities of the B-25 aircrews, and the quality of the escort protection provided by the fighter pilots.

The 442nd Regimental Combat Team was an infantry regiment in the U.S. Army comprised of Americans of Japanese ancestry. The 442nd fought in Italy and France during World War II against the German Army of Hitler's Third Reich. It was the most decorated unit for its size and length of service in the history of American warfare. Its motto was "Go for Broke."

The 4,000 men who initially made up the unit in April 1943 had to be replaced nearly 2.5 times. In total, about 14,000 men served, earning 9,486 Purple Hearts. The unit was awarded eight Presidential Unit Citations (five earned in one month). Twenty-one of its members were awarded Medals of Honor.

In an increasingly diverse nation, APIs stand apart as one of the most diverse communities. Generations of APIs have helped develop and defend the United States. These men and women struggled, sacrificed, and persevered to build a better life for their children and all Americans.

This month's annual observance gives everyone the opportunity to honor, recognize and celebrate the rich diversity, leadership and enduring empowerment of all Asian American and Pacific Islanders, and their dedicated service and contributions to the betterment of the American nation.

(Portions of this article were taken from the Defense Equal Opportunity Management Institute.)

**Walk together.
Embrace differences.
Build Legacies.**

Hail & Farewell

NASA welcomes the following:

Heather Hendrix

Student Intern (Procurement)

Office of Procurement

Thomas Lipski

AST, Propulsion Systems and Technologies

Engineering & Test Directorate

NASA selects business projects for development

NASA has selected 399 research and technology proposals from 259 American small businesses and 42 research institutions that will enable NASA's future missions into deep space, while also benefiting the U.S. economy. The awards have a total value of approximately \$49.7 million.

"These proposals represent the entrepreneurial spirit of small businesses that fuel our economy and create jobs on Main Street," said Steve Jurczyk, associate administrator for the Space Technology Mission Directorate at NASA Headquarters in Washington. "The dollar value of these innovation projects represents an investment in the American economy."

Selected proposals will support the development of technologies in the areas of aeronautics, science, human exploration and operations, and space technology. The agency received 1,278 proposals in response to its 2016 solicitation for its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs. From those, NASA selected 341 SBIR and 58 STTR Phase I proposals for contract negotiations.

Six selected SBIR proposals and four STTR proposals involve technology being administered by the Office of the Chief Technologist at NASA's Stennis Space Center, each worth up to \$125,000 in the Phase 1 period.

The six SBIR projects are:

- "Accident Tolerant Reactor Shutdown for NTP Systems," developed by Ultra Safe Nuclear Corp. in Los Alamos, New Mexico.
- "Elimination of Rocket Ignition Side Loads," developed by Arizona Systems Engineering Group, LLC. in Tucson, Arizona.

- "Fast Fiber-Coupled Imaging of X-Rays Events," developed by HyperV Technologies Corp. in Chantilly, Virginia.
- "Color-XHDR - A Compact High-Speed Color Extreme High Dynamic Range Video Capability for Rocket Engine Testing," developed by Innovative Imaging and Research Corp. at Stennis Space Center, Mississippi.
- "Plume Velocimetry Diagnostic for Large Rocket Engines," developed by MetroLaser, Inc. in Laguna Hills, California.
- "Robust Cryogenic Cavitation Modeling for Propulsion Systems Ground Test Facilities," developed by Tetra Research Corp. in Princeton, Illinois.

The four STTR projects are:

- "Efficient High Fidelity Computational Tool for Acoustically Driven Multiphysics Propulsion Modeling," developed by Tetra Research Corp. in Princeton, Illinois, and Mississippi State University in Starkville, Mississippi.
- "Active Radiation Shield," developed by Gloyer-Taylor Laboratories, LLC in Tullahoma, Tennessee, and the University of Tennessee in Knoxville, Tennessee.
- "Modular Embedded Intelligent Sensor Network," developed by Angstrom Designs Inc. in Santa Barbara, California, and the University of California at Santa Barbara.
- "Wireless Networked Sensors for Remote Monitoring in Propulsion Systems," developed by Nanosonic Inc. in Pembroke, Virginia, and the Virginia Tech-Mechanical Engineering Department in Blacksburg, Virginia.

For more information about NASA's investment in space technology, visit: <http://www.nasa.gov/spacetech>.

Stennis remembers Holocaust

Manfred "Manny" Klepper speaks about his experiences in 1930s Germany during the 2016 Holocaust Days of Remembrance program at Stennis Space Center on May 4. Klepper was born in Germany in 1931 and immigrated to the United States in 1940, having survived the Kristallnacht (Night of Broken Glass) pogrom against Jews in 1938.



Groups tour Stennis, visit engine test stands

A trio of groups visited Stennis Space Center in April to receive briefings on site work and tour facilities.

(Top photo) Members of the NASA Aerospace Safety Advisory Panel stand in front of the B-1/B-2 Test Stand during their tour of facilities April 26.

(Middle photo) NASA Office of Chief Technologist representatives from agency Headquarters and centers across the country visit the A-1 Test Stand during a tour of Stennis on April 27.

(Bottom photo) U.S. Navy Supervisor of Shipbuilding (SUSHIP) engineering duty officers visit the A-1 Test Stand during a tour of Stennis on April 29.

